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EXAMINER	
WORKU, NEGUSSIE	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/992,869	SAITOU ET AL.	
	Examiner	Art Unit	
	Negussie Worku	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 November 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15,17,18,20-25 and 27-30* is/are rejected.

7)☒ Claim(s) *16,19,26 and 29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Negussie Worku
5/12/05

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application (PTO-152)
6)☒ Other: Detailed Action

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claims 17-19 and 27-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. Therefore, Claims 17-19 and 27-29 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claims. See MPEP § 608.01(n). Accordingly, the claims 14-19 and 27-29 are not been further treated on the merits.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 1- is rejected under 35 U.S.C. 103(a) as being unpatentable over Koshimizu (USP 6,660,987), in view of Furusawa et al. (USP 6,357,903).

With regard to claim 1, Koshimizu discloses an image reading apparatus (fig 1) for reading a light-transmission original, (document positioned on platen glass 17 of fig 1), comprising an area light source (area light source 6 of fig 5) for irradiating light to said light-transmission original, (transparent original reading lam 6 of fig 5).

Koshimizu does not disclose a light guide plate in which at least one of an LED device including red, green, and blue-LED chips is arranged to a peripheral side surface thereof.

Furusawa, in the same area of an illuminator of line array type to be used in an image reading apparatus (fig 1-4), teaches a light guide plate (4 of fig 1 and 2) in which at least one of an LED device (light source 10 comprising [blue, red, green LED chips 14a-14c] of fig 3) including red, green, and blue-LED chips is arranged to a peripheral side surface thereof, see col.6, lines 48-55).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the the image reading and illumination apparatuses of Koshimizu to include: a light guide plate in which at least one of a LED device including red, green, and blue-LED chips is arranged to a peripheral side of the surface.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination device of Koshimizu by the teaching of Furusawa because of the following reason: it would have enabled users to avoid unevenness in the illumination intensity on the surface of the manuscript, particulatly in the longitudinal direction, which may cause errors in reading the image, therefore, it is desirable for the intensity of illumination to be as uniform or as even as possible, as discussed by Furusawa et al. see col.1, lines 35-45.

With regard to claim 2, Koshimizu discloses an image reading apparatus (fig 1) for reading a light-transmission original, (document positioned on platen glass 17 of fig 1), comprising: a case (reading device 1 of fig 5) the upper surface thereof having a transparent plate (platen glass 13 of fig 5) on which said light-transmission original is

placed (platen glass 13 of fig 5, for supporting the original to be read); a contact image sensor (a CCD line sensor equivalent to contact image sensor provided in the fig 1 of reading device) provided in said case, which can be reciprocated moved for reading and scanning, see (col.4, lines 65-68) said contact image sensor comprising an erect unity-magnification optical system (lens 105 of fig 1) and a line sensor (line sensor CCD 106 of fig 5); and an area light source (light source 6 of fig 6) for irradiating light to said light-transmission original, (original to be read supported by platen glass) provided upstream of said transparent plate (13 of fig 5).

Koshimizu does not disclose a light guide plate in which at least one of an LED device including red, green, and blue-LED chips is arranged to a peripheral side surface thereof.

Furusawa, in the same area of an illuminator of line array type to be used in an image reading apparatus (fig 1-4), teaches a light guide plate (4 of fig 1 and 2) in which at least one of an LED device (light source 10 comprising [blue, red, green LED chips 14a-14c] of fig 3) including red, green, and blue-LED chips is arranged to a peripheral side surface thereof, see col.6, lines 48-55).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination apparatuses of Koshimizu to include: a light guide plate in which at least one of a LED device including red, green, and blue-LED chips is arranged to a peripheral side of the surface.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination device of Koshimizu by the teaching of Furusawa because of the following reason: it would have enabled users to avoid unevenness in the illumination intensity on the surface of the manuscript, particularly in the longitudinal direction, which may cause errors in reading the image, therefore, it is desirable for the intensity of illumination to be as uniform or even as possible, as discussed by Furusawa et al. see col.1, lines 35-45.

With regard to claim 3, Koshimizu discloses an image reading apparatus (fig 1), wherein, simultaneously with an operation for reading and scanning by said contact image sensor, (CCD line sensor 106 of fig 5, is equivalent to a contact image sensor), the red-, green-, and blue-LED chips are sequentially lit on.

Koshimizu does not disclose the red, green, and blue-LED chips are sequentially lit on.

Furusawa, in the same area of an illuminator of line array type to be used in an image reading apparatus (fig 1-4), teaches LED chips (light source 10 comprising [blue, red, green LED chips 14a-14c] of fig 3) including red, green, and blue-LED chips is arranged to a peripheral side surface thereof, see col.6, lines 48-55), which are sequentially lit (which reads on being energized one by one) see (col.1, lines 1-7)

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination apparatuses to include: the red, green, and blue-LED chips are sequentially lit on.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination device of Koshimizu by the teaching of Furusawa because of the following reason: it would have provided users to avoid unevenness in the illumination intensity on the surface of the manuscript, particularly in the longitudinal direction, which may cause errors in reading the image, therefore, it is desirable for the intensity of illumination to be as uniform or even as possible, as discussed by Furusawa et al. see col.1, lines 35-45.

With regard to claim 4, Koshimizu discloses an image reading apparatus (fig 1), further comprising: a linear light source (liner light source 20 of fig 5) for irradiating light to a sheet original in said contact image sensor, (CCD senor an equivalent to contact image sensor) wherein said area light source (whole area light source 3 of fig 5) is incorporated in an original cover, (3 of fig 5) and the light-transmission original is read by lighting on said area light source (whole area light source 3 of fig 5, se col.5, lines 12-15) and the sheet original is read by lighting on said linear light source (linear light source 20 of fig 5, see col.5, lines 3-5).

With regard to claim 5, Koshimizu discloses an image reading apparatus (fig 1), wherein the dimension of said area light source (whole area light source 6 of fig 6) is

equal to the sum of an integer multiple of the dimension of one frame of the light-transmission original and spaces between frames, (it is inherent to accommodate the area light source in a way it fit in the main body of the apparatus).

With regard to claim 6, Koshimizu discloses an image reading apparatus (fig 1), further comprising: a light-on circuit which is shared to light on said area light source (whole area light source 6 of fig 5 or 5) and said linear light source (20 of fig 5); and a switch which is switched to transmit an output of said light-on circuit to said linear light source or said area light source (light source control 24 of fig 1).

With regard to claim 7, Koshimizu discloses an area light source (20 of fig 5) for irradiating light to a light-transmission original in an image reading apparatus (fig 1) for reading the light-transmission original, see (col.5, lines 10-15), comprising: a light guide plate (11 of fig 3) for scattering or reflecting light on a rear surface thereof; a white bottom plate (lower cover 5 of fig 4) for covering the rear surface of said light guide plate (lower cover 5 of fig 4, covers the area surface of the light guide, as shown in fig 5); a white case frame (the main body of reading apparatus of fig 1) for covering a side surface of said light guide plate (19 of fig 3); a scattering sheet (light shield sheet 4 of fig 2) for covering an upper surface of said light guide plate, see (col.4, lines 10-15).

Koshimizu does not disclose and at least one LED device including red-, green-, and blue-LED chips, which is arranged at a peripheral side surface of said light guide plate.

Furusawa, in the same area of an illuminator of line array type to be used in an image reading apparatus (fig 1-4), teaches a LED device (light source 10 comprising [blue, red, green LED chips 14a-14c] of fig 3) including red, green, and blue-LED chips is arranged to a peripheral side surface of said light guide plate, see col.6, lines 48-55).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination apparatuses of Koshimizu to include: and at least one LED device including red-, green-, and blue-LED chips, which is arranged at a peripheral side surface of said light guide plate.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination device of Koshimizu by the teaching of Furusawa because of the following reason: it would have provided users to avoid unevenness in the illumination intensity on the surface of the manuscript, particularly in the longitudinal direction, which may cause errors in reading the image, therefore, it is desirable for the intensity of illumination to be as uniform or even as possible, as discussed by Furusawa et al. see col.1, lines 35-45.

With regard to claim 8, Koshimizu discloses an area light source (20 of fig 5) for irradiating light to a light-transmission original in an image reading apparatus (fig 1) for reading the light-transmission original, see (col.5, lines 10-15), comprising: a light guide plate (11 of fig 3) for scattering or reflecting light on a rear surface thereof; a white bottom plate (lower cover 5 of fig 4) for covering the rear surface of said light guide plate

(lower cover 5 of fig 4, covers the area surface of the light guide, as shown in fig 5); a white case frame (the main body of reading apparatus of fig 1) for covering a side surface of said light guide plate (19 of fig 3); a scattering sheet (light shield sheet 4 of fig 2) for covering an upper surface of said light guide plate, see (col.4, lines 10-15).

Koshimizu does not disclose and at least one LED device including red-, green-, and blue-LED chips, which is arranged at a peripheral side surface of said light guide plate.

Furusawa, in the same area of an illuminator of line array type to be used in an image reading apparatus (fig 1-4), teaches a LED device (light source 10 comprising [blue, red, green LED chips 14a-14c] of fig 3) including red, green, and blue-LED chips is arranged to a peripheral side surface of said light guide plate, see col.6, lines 48-55).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination apparatuses of Koshimizu to include: and at least one LED device including red-, green-, and blue-LED chips, which is arranged at a peripheral side surface of said light guide plate.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination device of Koshimizu by the teaching of Furusawa because of the following reason: it would have provided users to avoid unevenness in the illumination intensity on the surface of the manuscript, particularly in the longitudinal direction, which may cause errors in reading the image, therefore, it is desirable for the intensity of illumination to be as uniform or

even as possible, as discussed by Furusawa et al. see col.1, lines 35-45.

With respect to claim 9, Koshimizu as modified by Furusawa still does not, wherein a dot pattern of a light scatterer is formed on a rear surface of said light guide plate.

Ishikawa, in the same area of an area light source teaches an image area light source (1 as shown in fig 5) wherein a dot pattern of a light scattered is formed on a rear surface of said light guide plate (guide plate 2 of fig 1, dot pattern is defined for the entire rear surface of the light guide, see col.6, line 25-30).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination apparatuses of Koshimizu to include: dot pattern of a light scattered is formed on a rear surface of said light guide plate.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the illumination device of Koshimizu as modified by Furusawa by the teaching of Ishikawa for the purpose of providing users to avoid unevenness in the illumination intensity on the surface of the manuscript, which may cause errors in reading the image, therefore, it is desirable for the intensity of illumination to be as uniform or even as possible, as discussed by Ishikawa see (col.1, lines 53-58).

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koshimizu (USP 6,660,987) as applied to claims 1-9, above, and further in view of Ishikawa (USP 5,921,651).

With respect to claim 10, Koshimizu as modified by Furusawa still does not teach wherein said dot pattern is a circular dot pattern.

Ishikawa, in the same area of an area light source teaches an image area light source (1 as shown in fig 5) wherein said dot pattern is a circular dot pattern, (guide plate 2 of fig 1, a circular dot pattern is defined for the entire rear surface of the light guide, see col.6, line 25-30).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination apparatus of Koshimizu as modified to include: a circular dot pattern.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the illumination device of Koshimizu as modified by Furusawa by the teaching of Ishikawa for the purpose of enables users to avoid unevenness in the illumination intensity on the surface of the manuscript, which may cause errors in reading the image, therefore, it is desirable for the intensity of illumination to be as uniform or even as possible, as discussed by Ishikawa see (col.1, lines 53-58).

5. Claim 11- is rejected under 35 U.S.C. 103(a) as being unpatentable over Koshimizu (USP 6,660,987), in view of Yamamoto (USP 6,084,983).

With respect to claim 11, Koshimizu teaches a shading correcting apparatus (fig 1) for correcting the variation of sensitivities of a line sensor (line sensor 106 of fig 1), and

the variation of luminance's of an area light source (light source 3 of fig 1) in an image reading apparatus, see (col.3, lines 35-40).

Koshimizu does not teach a correction coefficient calculating unit for calculating a correction coefficient for electrical weighting so that an output value of an electrical signal outputted by said line sensor becomes constant, by lighting on any of red-, green- and blue-LED chips in said area light source, scanning an image in a state in which, on the transparent plate, there is no original or a semitransparent film is placed, and receiving light from said area light source; a memory for storing said correction coefficient for a 2-dimensional position of each pixel in said line sensor and the light emission of the red-, green-, and blue-LED chips; and a shading correcting unit for reading the correction coefficient from said memory upon actually reading an image and multiplying the output value of the electrical signal of each pixel, which is outputted by said line sensor, to the correction coefficient corresponding to each pixel.

Yamamoto, in the same area image reading device and method (fig 1-3) discloses a correction coefficient calculating unit (103 of fig 3) for calculating a correction coefficient for electrical weighting so that an output value of an electrical signal outputted by said line sensor (30 of fig 1) becomes constant, see (col.4, lines 49-65) by lighting on any of red-, green- and blue-LED chips in said area light source, (light source 20 of fig 2, with light emitting diodes 21r, 21G and 21B) scanning an image in a state in which, see (col.4, lines 18-25) on the transparent plate, (object to be read is supported by frame 11 of fig 2) there is no original or a semitransparent film is placed, and receiving light from said area light source (light source 20 of fig 2); a memory

(memory 46 of fig 1) for storing said correction coefficient for a 2-dimensional position of each pixel in said line sensor, see (col.3, lines 50-55), and the light emission of the red-, green-, and blue-LED chips , see (col.4, lines 18-25); and a shading correcting unit (image processing circuit 45 of fig 1, see col.5, lines 25-30) for reading the correction coefficient from said memory (memory 46 of fig 1), upon actually reading an image and multiplying the output value of the electrical signal of each pixel, which is outputted by said line sensor, to the correction coefficient corresponding to each pixel, see (col.6, lines 30-38).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination apparatuses to include: a correction coefficient calculating unit for calculating a correction coefficient for electrical weighting so that an output value of an electrical signal outputted by said line sensor becomes constant, by lighting on any of red-, green- and blue-LED chips in said area light source, scanning an image in a state in which, on the transparent plate, there is no original or a semitransparent film is placed, and receiving light from said area light source; a memory for storing said correction coefficient for a 2-dimensional position of each pixel in said line sensor and the light emission of the red-, green-, and blue-LED chips; and a shading correcting unit for reading the correction coefficient from said memory upon actually reading an image and multiplying the output value of the electrical signal of each pixel, which is outputted by said line sensor, to the correction coefficient corresponding to each pixel.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and processing illumination device of Koshimizu by the teaching of Yamamoto for the purpose of providing users to avoid unevenness in the illumination intensity on the surface of the manuscript, and the correction coefficient is used for correcting an error generated mainly due to unevenness in the radiation of light from the light source, may cause errors in reading the image, therefore, it is desirable for the intensity of illumination to be as uniform or even as possible, as discussed by Yamamoto see (col.1, lines 25-30).

With respect to claim 12, Koshimizu teaches a shading correcting apparatus (fig 1) for correcting the variation of sensitivities of a line sensor (line sensor 106 of fig 1), and the variation of luminance's of an area light source (light source 3 of fig 1) in an image reading apparatus, see (col.3, lines 35-40).

Koshimizu does not teach a correction coefficient calculating unit for calculating a correction coefficient for electrical weighting so that an output value of an electrical signal outputted by said line sensor becomes constant, by lighting on any of red-, green- and blue-LED chips in said area light source, scanning an image in a state in which, on the transparent plate, there is no original or a semitransparent film is placed, and receiving light from said area light source; a memory for storing said correction coefficient for a 2-dimensional position of each pixel in said line sensor and the light emission of one or two LED chips of the red the red-, green-, and blue-LED chips; and setting the correction coefficient stored for one or two Led chips to be correction

standard for the emission of the remaining Led chip; and a shading correcting unit for reading the correction coefficient from said memory upon actually reading an image and multiplying the output value of the electrical signal of each pixel, which is outputted by said line sensor, to the correction coefficient corresponding to each pixel.

Yamamoto, in the same area image reading device and method (fig 1-3) discloses a correction coefficient calculating unit (103 of fig 3) for calculating a correction coefficient for electrical weighting so that an output value of an electrical signal outputted by said line sensor (30 of fig 1) becomes constant, see (col.4, lines 49-65) by lighting on any of red-, green- and blue-LED chips in said area light source, (light source 20 of fig 2, with light emitting diodes 21r, 21G and 21B) scanning an image in a state in which, see (col.4, lines 18-25) on the transparent plate, (object to be read is supported by frame 11 of fig 2) there is no original or a semitransparent film is placed, and receiving light from said area light source (light source 20 of fig 2); a memory (memory 46 of fig 1) for storing said correction coefficient for a 2-dimensional position of each pixel in said line sensor, see (col.3, lines 50-55), and the light emission of one or two LED chips of the red the red-, green-, and blue-LED chips; and setting the correction coefficient stored for one or two Led chips to be correction standard for the emission of the remaining Led chip the red-, green-, and blue-LED chips , see (col.4, lines 18-25); and a shading correcting unit (image processing circuit 45 of fig 1, see col.5, lines 25-30) for reading the correction coefficient from said memory (memory 46 of fig 1), upon actually reading an image and multiplying the output value of the

electrical signal of each pixel, which is outputted by said line sensor, to the correction coefficient corresponding to each pixel, see (col.6, lines 30-38).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination apparatuses of Koshimizu to include: a correction coefficient calculating unit for calculating a correction coefficient for electrical weighting so that an output value of an electrical signal outputted by said line sensor becomes constant, by lighting on any of red-, green- and blue-LED chips in said area light source, scanning an image in a state in which, on the transparent plate, there is no original or a semitransparent film is placed, and receiving light from said area light source; a memory for storing said correction coefficient for a 2-dimensional position of each pixel in said line sensor and the light emission of one or two LED chips of the red the red-, green-, and blue-LED chips; and setting the correction coefficient stored for one or two Led chips to be correction standard for the emission of the remaining Led chip the red-, green-, and blue-LED chips; and a shading correcting unit for reading the correction coefficient from said memory upon actually reading an image and multiplying the output value of the electrical signal of each pixel, which is outputted by said line sensor, to the correction coefficient corresponding to each pixel.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and processing illumination device of Koshimizu by the teaching of Yamamoto for the purpose of providing users to avoid unevenness in the illumination intensity on the surface of the manuscript, and the

correction coefficient is used for correcting an error generated mainly due to unevenness in the radiation of light from the light source, may cause errors in reading the image, therefore, it is desirable for the intensity of illumination to be as uniform or even as possible, as discussed by Yamamoto see (col.1, lines 25-30).

With respect to claim 13, Koshimizu does not disclose a shading correcting apparatus, wherein one correction coefficient calculated by said correction coefficient calculating unit is stored in said memory as one representative correction coefficient of one or more pixels in an adjacent pixel area.

Yamamoto discloses a shading correcting apparatus, (fig 1-3), wherein one correction coefficient calculated by said correction coefficient calculating unit (image processing circuit 45 of fig 1, see col.5, lines 25-35) is stored in said memory (memory 46 of fig 1) as one representative correction coefficient of one or more pixels in an adjacent pixel area, see (col.6, lines 30-38).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination apparatuses to include: wherein one correction coefficient calculated by said correction coefficient calculating unit is stored in said memory as one representative correction coefficient of one or more pixels in an adjacent pixel area

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and processing illumination device of Koshimizu by the teaching of Yamamoto for the purpose of providing users to

avoid unevenness in the illumination intensity on the surface of the manuscript, and the correction coefficient is used for correcting an error generated mainly due to unevenness in the radiation of light from the light source, may cause errors in reading the image, therefore, it is desirable for the intensity of illumination to be as uniform or even as possible, as discussed by Yamamoto see (col.1, lines 25-30).

With respect to claim 14, Koshimizu does not disclose a shading correcting apparatus wherein the number of pixels, which is one or more, is constant every said pixel area.

Yamamoto teaches a shading correcting apparatus wherein the number of pixels, (a level of pixels (FS) full scale pixel shown in fig 4 shows the number of pixel which is constant) one or more, pixels is constant every said pixel area, see col.5, lines 35-50.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination apparatuses to include: a shading correcting apparatus wherein the number of pixels, which is one or more, is constant every pixel area.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and processing illumination device of Koshimizu by the teaching of Yamamoto for the purpose of providing users to avoid unevenness in the illumination intensity on the surface of the manuscript, and the correction coefficient is used for correcting an error generated mainly due to unevenness in the radiation of light from the light source, may cause errors in reading

the image, therefore, it is desirable for the intensity of illumination to be as uniform or even as possible, as discussed by Yamamoto see (col.1, lines 25-30).

With respect to claim 15, Koshimizu does not disclose a shading correcting apparatus wherein the number of pixels, which is one or more, is different depending on pixel area.

Yamamoto teaches shading correcting apparatus wherein the number of pixels, (a level of pixels (WD) white level correction data shown in fig 4, shows the number of pixel which is different) which is one or more, is different depending on the pixel area, see col.5, lines 35-50.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination apparatuses to include: a shading correcting apparatus wherein the number of pixels, which is one or more, is different depending on said pixel area.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and processing illumination device of Koshimizu by the teaching of Yamamoto for the purpose of providing users to avoid unevenness in the illumination intensity on the surface of the manuscript, and the correction coefficient is used for correcting an error generated mainly due to unevenness in the radiation of light from the light source, may cause errors in reading the image, therefore, it is desirable for the intensity of illumination to be as uniform or even as possible, as discussed by Yamamoto see (col.1, lines 25-30).

With respect to claim 17, Koshimizu discloses a shading correcting apparatus (fig 1-4) wherein a correction coefficient of one pixel on a predetermined line, see (col.3, lines 35-40) which is calculated by said correction coefficient calculating unit, (image processor 29 of fig 1, see col.3, lines 35-40) is stored in said memory (RAM 32 of fig 1) as correction coefficients of all pixels, see (col.3, lines 50-55) in a reading direction, which intersect with the pixel.

With respect to claim 18, Koshimizu discloses a shading correcting apparatus (fig 1-4), wherein an image reading range is limited and the correction coefficients of pixels are stored in said memory, (RAM 32 of fig 1, see col.3, lines 50-55).

With respect to claim 20, Koshimizu teaches a shading correcting apparatus (fig 1-3), wherein said semitransparent film is a base film as a base material of the read film (a transparent original or a film, see col4, lines 1-5).

With respect to claim 21, Koshimizu teaches a shading correcting method (fig 1) for correcting the variation of sensitivities of a line sensor (line sensor 106 of fig 1), and the variation of luminance's of an area light source (light source 3 of fig 1) in an image reading apparatus, see (col.3, lines 35-40), comprising the step of: scanning an image by said contact image sensor (106 of fig 1) in a state in which, on the transparent plate, (film support unit 46 of fig 2) there is no original or a semitransparent film is placed, and

receiving light from said area light source (area light source 3 of fig 2) and outputting an electrical signal by said line sensor (106 of fig 1)

Koshimizu does not teach calculating a correction coefficient for electrical weighting so that an output value of an electrical signal outputted by said line sensor becomes constant, by lighting on any of red-, green- and blue-LED chips in said area light source, scanning an image in a state in which, on the transparent plate, there is no original or a semitransparent film is placed, and receiving light from said area light source; a memory for storing said correction coefficient for a 2-dimensional position of each pixel in said line sensor and the light emission of the red-, green-, and blue-LED chips and using the stored correction coefficient upon actually reading the image.

Yamamoto, in the same area image reading device and method (fig 1-3) discloses a correction coefficient calculating unit (103 of fig 3) for calculating a correction coefficient for electrical weighting so that an output value of an electrical signal outputted by said line sensor (30 of fig 1) becomes constant, see (col.4, lines 49-65); and a memory (memory 46 of fig 1) for storing said correction coefficient for a 2-dimensional position of each pixel in said line sensor, see (col.3, lines 50-55), and the light emission of the red-, green-, and blue-LED chips , see (col.4, lines 18-25); and using the stored correction coefficient upon actually reading the image, see (col.6, lines 30-38).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination apparatuses of Koshimizu to include: teach calculating a correction coefficient for

electrical weighting so that an output value of an electrical signal outputted by said line sensor becomes constant, by lighting on any of red-, green- and blue-LED chips in said area light source, scanning an image in a state in which, on the transparent plate, there is no original or a semitransparent film is placed, and receiving light from said area light source; a memory for storing said correction coefficient for a 2-dimensional position of each pixel in said line sensor and the light emission of the red-, green-, and blue-LED chips and using the stored correction coefficient upon actually reading the image.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and processing illumination device of Koshimizu by the teaching of Yamamoto for the purpose of enabling users to avoid unevenness in the illumination intensity on the surface of the manuscript, and the correction coefficient is used for correcting an error generated mainly due to unevenness in the radiation of light from the light source, may cause errors in reading the image, therefore, it is desirable for the intensity of illumination to be as uniform or even as possible, as discussed by Yamamoto see (col.1, lines 25-30).

With respect to claim 22, Koshimizu teaches a shading correcting method (fig 1) for correcting the variation of sensitivities of a line sensor (line sensor 106 of fig 1), and the variation of luminance's of an area light source (light source 3 of fig 1) in an image reading apparatus, see (col.3, lines 35-40), comprising the step of: scanning an image by said contact image sensor (106 of fig 1) in a state in which, on the transparent plate, (film support unit 46 of fig 2) there is no original or a semitransparent film is placed, and

receiving light from said area light source (area light source 3 of fig 2) and outputting an electrical signal by said line sensor (106 of fig 1)

Koshimizu does not teach calculating a correction coefficient for electrical weighting so that an output value of an electrical signal outputted by said line sensor becomes constant, by lighting on any of red-, green- and blue-LED chips in said area light source, scanning an image in a state in which, on the transparent plate, there is no original or a semitransparent film is placed, and receiving light from said area light source; a memory for storing said correction coefficient for a 2-dimensional position of each pixel in said line sensor and the light emission of the red-, green-, and blue-LED chips and using the stored correction coefficient upon actually reading the image.

Yamamoto, in the same area image reading device and method (fig 1-3) discloses a correction coefficient calculating unit (103 of fig 3) for calculating a correction coefficient for electrical weighting so that an output value of an electrical signal outputted by said line sensor (30 of fig 1) becomes constant, see (col.4, lines 49-65); and a memory (memory 46 of fig 1) for storing said correction coefficient for a 2-dimensional position of each pixel in said line sensor, see (col.3, lines 50-55), and the light emission of the red-, green-, and blue-LED chips , see (col.4, lines 18-25); and using the stored correction coefficient upon actually reading the image, see (col.6, lines 30-38).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination apparatuses of Koshimizu to include: teach calculating a correction coefficient for

electrical weighting so that an output value of an electrical signal outputted by said line sensor becomes constant, by lighting on any of red-, green- and blue-LED chips in said area light source, scanning an image in a state in which, on the transparent plate, there is no original or a semitransparent film is placed, and receiving light from said area light source; a memory for storing said correction coefficient for a 2-dimensional position of each pixel in said line sensor and the light emission of the red-, green-, and blue-LED chips and using the stored correction coefficient upon actually reading the image.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and processing illumination device of Koshimizu by the teaching of Yamamoto for the purpose of providing users to avoid unevenness in the illumination intensity on the surface of the manuscript, and the correction coefficient is used for correcting an error generated mainly due to unevenness in the radiation of light from the light source, may cause errors in reading the image, therefore, it is desirable for the intensity of illumination to be as uniform or even as possible, as discussed by Yamamoto see (col.1, lines 25-30).

With respect to claim 23, Koshimizu does not disclose a shading correcting method, wherein one correction coefficient calculated by said correction coefficient calculating unit is stored in said memory as one representative correction coefficient of one or more pixels in an adjacent pixel area.

Yamamoto disclose a shading correcting apparatus, (fig 1-3), wherein one correction coefficient calculated by said correction coefficient calculating unit (image

processing circuit 45 of fig 1, see col.5, lines 25-35) is stored in said memory (memory 46 of fig 1) as one representative correction coefficient of one or more pixels in an adjacent pixel area, see (col.6, lines 30-38).

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination apparatuses of Koshimizu to include: wherein one correction coefficient calculated by correction coefficient calculating unit is stored in said memory as one representative correction coefficient of one or more pixels in an adjacent pixel area

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and processing illumination device of Koshimizu by the teaching of Yamamoto for the purpose of providing users to avoid unevenness in the illumination intensity on the surface of the manuscript, and the correction coefficient is used for correcting an error generated mainly due to unevenness in the radiation of light from the light source, which may cause errors in reading the image, therefore, it is desirable for the intensity of illumination to be as uniform or even as possible, as discussed by Yamamoto see (col.1, lines 25-30).

With respect to claim 24, Koshimizu does not disclose a shading correcting method, wherein the number of pixels, which is one or more, is constant every said pixel area.

Yamamoto teaches a shading correcting apparatus wherein the number of pixels, (a level of pixels (FS) full scale pixel shown in fig 4, shows the number of pixel which is constant) which is one or more, is constant every said pixel area, see col.5, lines 35-50.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination apparatuses of Koshimizu to include: a shading correcting apparatus wherein the number of pixels, which is one or more, is constant every said pixel area.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and processing illumination device of Koshimizu by the teaching of Yamamoto for the purpose of providing users to avoid unevenness in the illumination intensity on the surface of the manuscript, and the correction coefficient is used for correcting an error generated mainly due to unevenness in the radiation of light from the light source, may cause errors in reading the image, therefore, it is desirable for the intensity of illumination to be as uniform or even as possible, as discussed by Yamamoto see (col.1, lines 25-30).

With respect to claim 25, Koshimizu does not disclose a shading correcting method, wherein the number of pixels, which is one or more, is different depending on pixel area.

Yamamoto teaches shading correcting apparatus wherein the number of pixels, (a level of pixels (WD) white level correction data shown in fig 4, shows the number of pixel which is different) which is one or more, is different depending on the pixel area, see col.5, lines 35-50.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and illumination

apparatuses of Koshimizu to include: a shading correcting apparatus wherein the number of pixels, which is one or more, is different depending on said pixel area.

It would have been obvious to a person with ordinary skill in the art at the time the invention was made to have modified the image reading and processing illumination device of Koshimizu by the teaching of Yamamoto for the purpose of providing users to avoid unevenness in the illumination intensity on the surface of the manuscript, and the correction coefficient is used for correcting an error generated mainly due to unevenness in the radiation of light from the light source, may cause errors in reading the image, therefore, it is desirable for the intensity of illumination to be as uniform or even as possible, as discussed by Yamamoto see (col.1, lines 25-30).

With respect to claim 27, Koshimizu discloses a shading correcting method (fig 1-4) wherein a correction coefficient of one pixel on a predetermined line, see (col.3, lines 35-40) which is calculated by said correction coefficient calculating unit, (image processor 29 of fig 1, see col.3, lines 35-40) is stored in said memory (RAM 32 of fig 1) as correction coefficients of all pixels, see (col.3, lines 50-55) in a reading direction, which intersect with the pixel.

With respect to claim 28, Koshimizu discloses a shading correcting method (fig 1-4), wherein an image reading range is limited and the correction coefficients of pixels are stored in said memory, (RAM 32 of fig 1, see col.3, lines 50-55).

With respect to claim 30, Koshimizu teaches a shading correcting method (fig 1-3), wherein said semitransparent film is a base film as a base material of the read film (a transparent original or a film, see col4, lines 1-5).

Claims objected to having allowable subject matter

6. Claims 16, 19, 26 and 29 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With respect to claim 16, the prior arts does not teach or disclose a shading correcting apparatus, wherein an area having a small variation of output values of electrical signals of pixels has a larger number of said adjacent pixels to which one representative correction coefficient is used, as compared with an area having a large variation of output value of electrical signals of pixels

With respect to claim 19, the prior arts does not teach or disclose a shading correcting apparatus, wherein said correction coefficient is a reciprocal number of the output value of the electrical signal, a value obtained by multiplying the reciprocal number of the output value of the electrical signal by a constant, or a value obtained by multiplying the reciprocal number of the output value of the electrical signal by an average of the electrical signals of pixels.

With respect to claim 26, the prior arts does not teach or disclose a shading correcting method, wherein an area having a small variation of output values of electrical signals of pixels has a larger number of said adjacent pixels to which one representative correction coefficient is used, as compared with an area having a large variation of output value of electrical signals of pixels.

With respect to claim 29, the prior arts does not teach or disclose a shading correcting method, wherein said correction coefficient is a reciprocal number of the output value of the electrical signal, a value obtained by multiplying the reciprocal number of the output value of the electrical signal by a constant, or a value obtained by multiplying the reciprocal number of the output value of the electrical signal by an average of the electrical signals of pixels.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Negussie Worku whose telephone number is 571-272-7472. The examiner can normally be reached on 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Williams can be reached on 571-272-7471. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Negussie Worku
05/09/05

MARK WALLERSON
PRIMARY EXAMINER